

THE REQUIREMENTS DETERMINATION
PROCESS FOR NAVAL WEAPON SYSTEMS:
AN ORGANIZATIONAL ANALYSIS

Lawrence E. Probst

Library
Naval Postgraduate School
Monterey, California 93940

NAVAL POSTGRADUATE SCHOOL

Monterey, California



THESIS

THE REQUIREMENTS DETERMINATION PROCESS
FOR
NAVAL WEAPON SYSTEMS:
AN ORGANIZATIONAL ANALYSIS

by

Lawrence E. Probst

and

Richard A. Wilson

March 1975

Thesis Advisor:

Robert R. Judson

Approved for public release; distribution unlimited.

T168192

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) The Requirements Determination Process for Naval Weapon Systems: An Organizational Analysis		5. TYPE OF REPORT & PERIOD COVERED Master's Thesis March 1975
7. AUTHOR(s) Lawrence E. Probst Richard A. Wilson		6. PERFORMING ORG. REPORT NUMBER
9. PERFORMING ORGANIZATION NAME AND ADDRESS Naval Postgraduate School Monterey, California 93940		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS Naval Postgraduate School Monterey, California 93940		12. REPORT DATE March 1975
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) Naval Postgraduate School Monterey, California 93940		13. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number)		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The requirements determination process for naval weapon systems should lead to the most cost effective solution to meet perceived defense mission deficiencies. This thesis analyzes current Navy requirements determination procedures and evaluates the effectiveness of recent modifications in correcting previously recognized shortcomings in this portion of the acquisition process. A current weakness identified in the navy procedural		

20. (Continued)

organization is the designation of platform-oriented DCNOs as Force and Mission Sponsors. Specific recommendations to correct this deficiency include the realignment of existing DCNO Warfare Areas and Logistics with DCNO Mission Areas which are coincident with the RDT&E Planning Categories of Strategic Deterrence, Sea Control, Projection of Power Ashore and Mission Support. The goal of this modification is to reduce platform advocacy in the OPNAV structure and enhance the mission orientation of the Navy's requirements determination process.

The Requirements Determination Process
for
Naval Weapon Systems:
An Organizational Analysis

by

Lawrence E. Probst
Lieutenant Commander, United States Navy
B.S., United States Naval Academy, 1964

and

Richard A. Wilson
Lieutenant Commander, United States Navy
B.S., United States Naval Academy, 1963

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

ABSTRACT

The requirements determination process for naval weapon systems should lead to the most cost effective solution to meet perceived defense mission deficiencies. This thesis analyzes current Navy requirements determination procedures and evaluates the effectiveness of recent modifications in correcting previously recognized shortcomings in this portion of the acquisition process. A current weakness identified in the navy procedural organization is the designation of platform-oriented DCNOs as Force and Mission Sponsors. Specific recommendations to correct this deficiency include the realignment of existing DCNO Warfare Areas and Logistics with DCNO Mission Areas which are coincident with the RDT&E Planning Categories of Strategic Deterrence, Sea Control, Projection of Power Ashore and Mission Support. The goal of this modification is to reduce platform advocacy in the OPNAV structure and enhance the mission orientation of the Navy's requirements determination process.

TABLE OF CONTENTS

I.	INTRODUCTION -----	7
A.	BACKGROUND -----	7
B.	PURPOSE AND APPROACH -----	8
II.	CURRENT PROCEDURES -----	10
A.	ESTABLISHING NATIONAL AND MILITARY STRATEGIES -----	10
B.	ASSESSMENT OF FORCE POSTURE -----	12
C.	RESEARCH AND DEVELOPMENT -----	15
D.	SUMMARY -----	20
III.	POTENTIAL PROBLEM AREAS -----	22
A.	PRODUCT ORIENTATION OF DCNOs -----	23
1.	Organizational Impact -----	24
2.	Restrictive Statements of Need -----	25
3.	Producer-Producer Dialogue -----	26
4.	Follow-On Imperative -----	28
5.	Acquisition Precedes Need -----	29
B.	PRODUCTION VICE LIFE CYCLE COST CONSCIOUSNESS -	30
C.	DETERMINATION OF NEEDS AND SELECTION OF SYSTEMS -----	32
IV.	RECOMMENDED MODIFICATIONS TO CURRENT STRUCTURE -----	35
A.	RESOLUTION OF EXISTING PROBLEMS -----	45
B.	NEW ORGANIZATION - NEW PROBLEMS -----	48

C. SAMPLE REQUIREMENTS DETERMINATION SCENARIO -----	53
V. CONCLUSIONS -----	57
BIBLIOGRAPHY -----	59
INITIAL DISTRIBUTION LIST -----	62

I. INTRODUCTION

A. BACKGROUND

One of the greatest challenges confronting the U. S. Navy today is the unquestioned requirement for sound management and efficiency in our weapons systems acquisition process. Declining defense budgets, increasing weapons systems costs, and intensified Congressional interest combine to create an environment which demands very close scrutinization of the rationale and justification for decisions made within the Department of Defense (DOD). In the past decade, Congressional committees, DOD "in-house" Study Groups, the General Accounting Office, and a Presidential Blue Ribbon Commission have all conducted in-depth studies in an effort to identify deficiencies which may be at the root of defense acquisition problems. The findings of these study groups have frequently indicated that many of the problems which appear can be traced directly to shortcomings in the requirements determination portion of the acquisition cycle. Specific examples of these shortcomings are described below:

"Military services. . . .become advocates of specific methods and approaches to meet their responsibilities. . . .Such advocacy leads to parochial choices of familiar kinds of systems. To encourage a greater number of more innovative alternative systems to meet

a given need, DOD requests for proposals should be broadly stated in terms of needed mission capability, program goals, and essential limitations, not in terms of required features or performance stipulations keyed to a particular kind of system."¹

"In recent years, the formalized requirements documents have been much too specific. Mission capabilities are spelled out in detail. In addition, configuration characteristics such as maintainability, reliability, weight, etc. are usually specified. Requirements issued in this manner severely limit the ingenuity of would-be developers. . . . It is recommended that the Secretary of Defense issue policy guidance to insure that operational requirements be stated in terms of broad objectives to encourage imaginative and innovative responses from potential developers."²

Numerous changes have been or are being instituted in DOD/Navy requirements determination procedures in a continuing effort to correct acknowledged deficiencies. Periodic evaluation of these changes must be made to determine if increased effectiveness in the defense systems acquisition process has been achieved.

B. PURPOSE AND APPROACH

The purpose of this thesis is to analyze current DOD/Navy requirements determination procedures and evaluate the effectiveness of recent modifications in correcting previously

¹Ad hoc Sub-committee on Federal Procurement, Report of the Commission on Government Procurement, Vol. 2 Part C, Acquisition of Major Systems, p. 14, 1972.

²Blue Ribbon Defense Panel, Appendix E, Report to the President and the Secretary of Defense on the Department of Defense, Vol. 6, p. 15, 18, 1970.

identified shortcomings in this portion of the acquisition process. The analysis is presented in three parts with the first being a description of the current (March 1975) requirements determination process;³ the second, a discussion on shortcomings which have not been completely corrected; and third, recommended modifications required to correct those deficiencies which still exist.

³The section on current requirements determination procedures is presented primarily for individuals who are not generally familiar with this portion of the acquisition process. These readers who are already well-acquainted with this area are encouraged to begin their perusal of this thesis at the commencement of the discussion on Potential Problem Areas, page 22.

II. CURRENT PROCEDURES

A. ESTABLISHING NATIONAL AND MILITARY STRATEGIES

The requirements determination process begins with the development of national security objectives by the National Security Council (NSC). The NSC publishes its findings and opinions in the form of National Security Study Memoranda (NSSM) which, when approved by the President, provide the basis for National Security Decision Memoranda (NSDM). The NSDMs used in conjunction with intelligence estimates provided by the Defense Intelligence Agency (DIA) serve as source documents for the Joint Chiefs of Staff (JCS) in their formulation of Military Strategy.

The military strategy formulation process is accomplished within the framework of the Joint Strategic Planning System (JSPS). As a major output of the JSPS, Volume One of the Joint Strategic Objectives Plan (JSOP I) provides appropriate military strategy for the short and mid-range period (up to ten years in the future) derived from the national security objectives delineated by the NSC plus environmental estimates contained in the Joint Intelligence Estimate for Planning (JIEP). The JIEP is a document prepared by the DIA which describes various situations and developments that might affect the

United States defense capabilities and enumerates possible courses of action which might be taken by potential enemies. The long-range period (ten to twenty years) is covered by the Joint Long Range Strategic Study (JLRSS) which is developed by the JCS to address the strategic implications of projected world-wide economic, political, social, and technical trends. The JLRSS has recently been given a more quantitative flavor through the use of environmental forecasting techniques based on regression analysis. The primary environmental input to the JLRSS is the DIA's Joint Long Range Estimative Intelligence Document (JLREID) which provides an in-depth appraisal of trends which are likely to affect world power relationships.

Specific implications for naval forces contained in both JSOP I and JLRSS are developed and amplified by the Navy's strategy projection studies. A recently published example of one of these studies was "Project 2000." The purpose of "Project 2000" was to examine trends which are most likely to affect the shape of the Navy through the last quarter of the twentieth century. Such studies represent a valuable approach to long-range planning of naval forces but must be continually updated if they are to remain useful in today's dynamic environment.

B. ASSESSMENT OF FORCE POSTURE

The assessment of force posture required to implement national strategy is performed concurrently by OSD, JCS, and the individual services. Assessment capabilities have been markedly enhanced in the last few years.

"Prior to 1970, force planning guidance provided for assessments to be accomplished under the assumption that the United States would be involved in $2\frac{1}{2}$ wars simultaneously (i.e. major conflicts with both the USSR and the Peoples Republic of China (PRC) plus a brushfire engagement). Since this assumption resulted in assessments which indicated an unrealistically weak force posture, the guidance was changed to provide for the use of $1\frac{1}{2}$ war scenario. This was still an extremely pessimistic assumption, however, which did not provide much latitude for an examination of force posture trade-offs. Consequently, the guidance was again revised in order to delineate six different scenarios which are relevant for planners of general-purpose forces:

1. A full-scale war with the USSR in the NATO region.
2. A major conflict in Asia involving U. S. defense of allies against PRC aggression.
3. Unilateral military action by the U. S., not involving direct confrontation with the USSR or PRC.
4. A limited confrontation with the USSR outside NATO.
5. Protection of maritime security.
6. Adequate peacetime 'presence' forces.

"While the first three scenarios are basically the same as those included in the $2\frac{1}{2}$ or $1\frac{1}{2}$ war guidance, separating them and adding the last three scenarios provides much more flexibility due to the fact they can be utilized individually or in combination according to the needs dictated by specific situations. Although more

detailed specification will be required in order to provide a truly uniform basis for force planning trade-off decisions, the delineation of these six individual scenarios is a definite step in that direction."⁴

Another important innovation has been the creation of special panels dedicated to the task of developing assessments at both the OSD and Office of the Chief of Naval Operations (OPNAV) levels. These panels are tasked with the responsibility for performing "a comparative analysis of those military, technological, political, and economic factors which impede or have a potential to impede our national security objectives, with those factors available or potentially available to enhance accomplishment of these same national security objectives."⁵ "While the OSD net assessment organization is still in the formative stages, its Navy counterpart has already had an impact on planning activities. Situated within the Office of Navy Program Planning (OP-090), this group has several important functions. Besides being the central clearing house for all Navy assessment activities (e.g. the SEAMIX Study Group), it is responsible for updating the 'CNO Net Assessment of the United States and Soviet Navies' as well as performing other

⁴Jordan, R. L., The Requirements Determination Process for Major Naval Weapon Systems: A Procedural Analysis, Master's Thesis, Naval Postgraduate School, 1974.

⁵OPNAV Instruction 5430.49, 19 February 1974, Navy Net Assessment Organization.

assessments independently and in conjunction with OSD (e.g. The Navy Missions Study). As it matures, this organization should provide the direction for Navy assessment activities that was so sorely deficient prior to 1973."⁶

Yet another major change at both the OSD and OPNAV levels has been to augment Defense Policy and Planning Guidance (DPPG) prepared by OSD and CNO Planning and Programming Guidance (CPPG) prepared by the Chief of Naval Operations with the Extended Planning Annex (EPA) and the Extended Planning Guidance (EPG) respectively. The action resulted from the realization that the traditional guidance documents were not adequate for long-range force planning and assessment purpose because of their relatively short (eight-year) horizon. The EPA and EPG lengthen the guidance horizon by ten years and thereby provide a common framework for long-range plans throughout the Navy and DOD. In addition, the CNO Program Analysis Memorandum (CPAM) development process has been broadened to give explicit attention to the long-range Research and Development (R&D) issues which had previously been excluded by the same eight-year horizon. CPAMs treat mission and support areas in terms of cost and capabilities and furnish the basis for consideration of broad program alternatives.

⁶Jordan, R. L., The Requirements Determination Process for Major Naval Weapon Systems: A Procedural Analysis, Master's Thesis, Naval Postgraduate School, 1974.

Remaining noteworthy documents in the assessment of force posture process include Defense Intelligence Projections for Planning (DIPP), JSOP Volume Two and the Navy's Force and Mission Sponsor Plans. The DIPP is prepared by the DIA and contains military force projections for the USSR and the Peoples Republic of China. In developing JSOP II, JCS uses inputs from JLRSS, DPPG/EPA and DIPP to prepare an assessment of potential enemy force projections. The Force and Mission Sponsor Plans are prepared by the various Deputy CNOs (DCNO) in OPNAV (e.g. DCNO Air Warfare, DCNO Surface Warfare and DCNO Submarine Warfare) and set forth, "as concisely and coherently as feasible, the sponsor perceived force/mission needs necessary to carry out CPPG guidance."⁷

C. RESEARCH AND DEVELOPMENT

The R&D needs of the services are monitored by the JCS through the preparation of the Joint Research and Development Objectives Document (JRDOD). The purpose of the JRDOD is to translate the JLRSS and JSOP implications for future capability needs into specific R&D objectives. This process assists SECDEF in the orientation of the total Defense R&D programs.

⁷OPNAV Instruction 5000.42, 1 June 1974, Weapon System Selection and Planning.

The Director of Defense Research and Engineering (DDR&E) is concurrently involved in this effort through development of Area Coordinating Papers (ACP), Mission Concept Papers (MCP) and Mission Area Summaries (MAS). These documents are designed to provide SECDEF with an overview of each mission area by identifying existing or projected problems and describing current programs for dealing with them.

The Navy's current procedures for identifying operations requirements and conducting management review during the R&D process were established by OPNAVINST 5000.42 of 1 June 1974. This instruction (included as Appendix A) represents the Navy's latest thinking in the area of requirements determination and attempts to incorporate the "thrust" of the recommendations made by the Commission on Government Procurement in their report of December 1972.⁸ Under the new procedures, the Director Research, Development, Test and Evaluation (OP-098) prepares the Navy R&D Plan concordant with the CPPG, EPG, Force and Mission Sponsor Plans, JRDOD, etc. This plan serves as the primary guide to the research and development community for the establishment of future programs and consists of Science and Technology Objectives (STO) and approved Operational Requirements. The STOs are prepared by

⁸Letter from Admiral J. L. Holloway, III, to Senator Lawton Chiles, 13 December 1974.

OP-098 and describe, in broad terms, the Navy's needs and problems requiring R&D solutions and are based on the Navy's role, objectives, and anticipated threat for the ten to twenty year future time frame. One STO is to be developed and maintained for each of the Research, Development, Test and Evaluation (RDT&E) Planning Categories identified in Figure 1.

Figure 1

RDT&E Planning Categories

I. Strategic Deterrence

A. Sea Based Strategic Warfare

II. Sea Control

A. Anti-Air Warfare

B. Anti-Submarine Warfare

C. Anti-Ship Warfare

D. Mine Warfare

III. Projection of Power Ashore

A. Amphibious Warfare

B. Tactical Air Warfare Ashore

C. Special Warfare

IV. Mission Support

- A. Personnel
- B. Support and Logistics
- C. Ocean Surveillance
- D. Command, Control, and Communications

The Naval Material Command (NAVMAT), as the "producer" representative in the Navy requirements definition dialogue, responds to the STO with a new document called Navy Advanced Concepts (NAC). Its purpose is to outline the Advanced Systems Concepts (ASC) prepared by the various systems commands (SYSCOMS) as an aid to OPNAV sponsors in refining their perceptions of need as expressed in the STOs. In a parallel role at the OSD level, DDR&E produces Technology Coordinating Papers (TCP) to provide SECDEF with an outline of new or improved capabilities believed to be reasonably attainable in the foreseeable future.

The Force and Mission Sponsors then issue Operational Requirements (OR) as they are able to define the specific performance parameters needed which are within the state of the art as reflected in the NAC. The OR is designed to be a concise statement of operational needs, limited to three pages in length, it appears to be an attempt to state requirements in terms of broad objectives to encourage imaginative and

innovative responses from potential developers. ORs which will clearly lead to major weapon system acquisitions, or will require costly R&D programs, or early conceptual effort are submitted to the CNO Executive Board (CEB) and the Acquisition Review Committee (ARC) for concurrence prior to promulgation. The ARC functions as a sub panel of the CEB and is composed of the Director, Navy Program Planning (chairman), Director, Research, Development, Test and Evaluation, Deputy Chief of Naval Operations (Logistics), Force and Mission Sponsor(s), and CNM representatives.

When an approved OR is promulgated by OPNAV, NAVMAT responds with a Development Proposal (DP). The DP presents a range of alternatives and trade-offs to achieve the particular range of capabilities solicited by the OR. Included in the DP are applicable estimates of development cost, unit cost of production model, degree of relative improvement over existing systems, etc. "It is anticipated that an iterative process will be developed through an informal dialogue between the cognizant OPNAV sponsor and NAVMAT to prepare the DP."⁹ It is hoped that through this avenue it will be possible to resolve all questions in relation to the statement of requirement (OR)

⁹OPNAV Instruction 5000.42, 1 June 1974, Weapon System Selection and Planning.

and the development of the alternatives available to fulfill the requirement (DP).

Once an approved OR and its attendant DP have defined the proposed system alternatives, a Navy Development Paper (NDCP) is drafted and reviewed by the CEB/ARC for the purpose of designating the CNO-preferred alternative and authorizing commencement of the conceptual development phase. The NDCP document includes a definition of program issues, the consideration which support the operational need, program objectives, program plans, performance parameters, areas of risk, and development alternatives.

Upon completion of the conceptual efforts, a Decision Coordinating Paper (DCP) is drafted and submitted to the CEB/ARC. If approved, it proceeds to the Department of the Navy Systems Acquisition Review Council (DNSARC), composed of SECNAV and his Assistants plus CNO and the Commandant of the Marine Corps. This body provides the final pre-SECDEF program validation and establishes the Department of the Navy position on the development alternatives. The DCP is then forwarded to DDR&E to enter formal Defense Systems Acquisition Review Council (DSARC) process.

D. SUMMARY

The current DOD, Navy Requirements Determination Process described in the preceding paragraphs of this section are summarized in Figure 2.

NAVY REQUIREMENTS DETERMINATION PROCESS
MARCH 1975

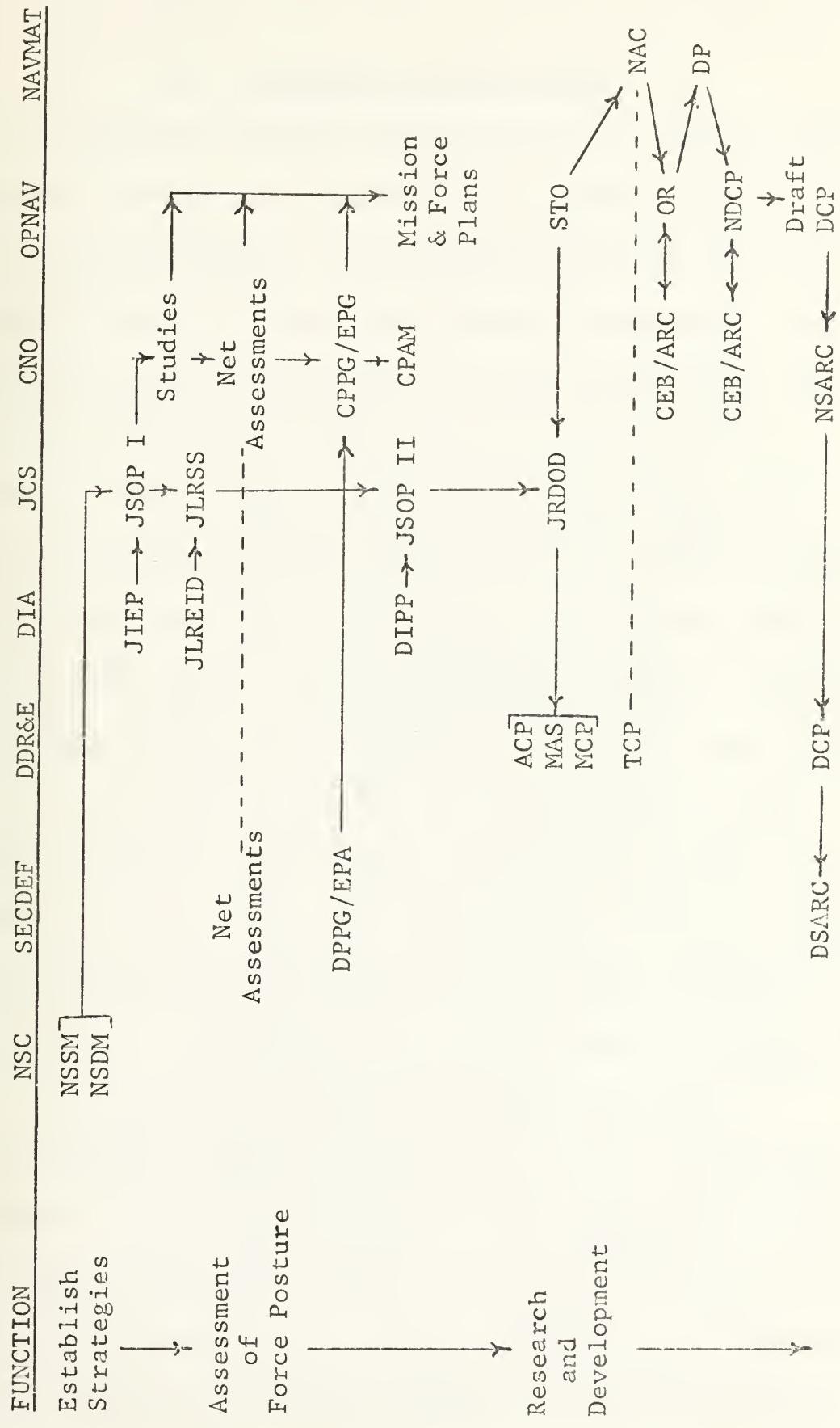


Figure 2

III. POTENTIAL PROBLEM AREAS

The evolutionary changes leading up to the current DOD/NAV requirements determination process (as described in Part II) do reflect an acknowledgment of documented criticism and indicate a positive effort to correct identified shortcomings. Organizing RDT&E planning categories in consonance with the basic Navy mission areas of Strategic Deterrence, Sea Control, Projection of Power Ashore, and Mission Support has been directly responsive to the Commission on Government Procurement's recommendation concerning the delineation of ongoing R&D programs by mission area rather than appropriation category. The document exchange process between OPNAV and NAVMAT has been greatly simplified and abbreviated, thereby reducing some of the emphasis on detailed requirements and helping to foster the development of more innovative alternatives. In addition, the more streamlined process appears to offer a more effective balance between informal dialogue and the necessary review and control attributes of a formally documented process.

A significant weakness which remains in the current Navy requirements determination process is the designation of the various DCNOs as Force and Mission Sponsors. Assuming that the Navy perceives its basic missions as being coincident with the areas listed in the RDT&E Planning Categories (as listed in

Figure 1) it appears incongruous that OPNAV should designate individuals that primarily represent platform types (e.g., air, surface, and submarines) as Mission Sponsors. The potential problem areas which remain uncorrected by having "Platform Sponsors" redesignated as Mission Sponsors are discussed in the following paragraphs.

A. PRODUCT ORIENTATION OF DCNOs

The Navy is in a sense a coalition of competing viewpoints fostered by what are really three navies (air, surface, and subsurface) and the Marine Corps.¹⁰ Although now classified as Force and Mission Sponsors, the "Big Three" of the OPNAV structure; DCNO Subsurface Warfare (OP-02), DCNO Surface Warfare (OP-03), and DCNO Air Warfare (OP-05), each have a natural inclination to become advocates of specific methods and approaches to meet their responsibilities. Indeed, it may even be stated that the various platform-type interests are sometimes antagonistic because in a fixed budget situation, more submarines means submariners get more opportunities for promotion while pilots get less, etc. Thus, DCNO Air Warfare has a propensity toward developing, procuring, and operating aircraft rather than truly sponsoring a given mission area

¹⁰Blue Ribbon Defense Panel, Appendix N, Report to the President and the Secretary of Defense on the Department of Defense, V. 15, p. 6.

such as Strategic Deterrence or Projection of Power Ashore. Similarly, the DCNOs for Surface and Subsurface Warfare are primarily interested in developing, producing, and operating ships and submarines respectively. The Armed Services have been criticized in the past because such advocacy has led to parochial choices of familiar platform systems.¹¹ Given platform-biased Mission Sponsors who are interested in any mission in general as long as it can be accomplished by the platform they advocate, it is highly likely that this shortcoming will continue to flourish in the current Navy requirements determination process.

1. Organizational Impact

Force and Mission Sponsors play key roles in the Navy's current requirements determination process. The DCNOs are tasked with developing Force and Mission Sponsor Plans which contain guidance for the introduction of new or modernized systems and set forth user (operating force) needs and objectives in consonance with CNO Planning and Programming Guidance. In addition, as members of the Acquisition Review Committee (ARC), they have a major part in the validation and promulgation of the primary control elements (e.g., OR, NDCP, and DCP)

¹¹Ad Hoc Sub-Committee on Federal Procurement, Report of The Commission on Government Procurement, Vol. 2, Part C, Acquisition of Major Systems, p. 14.

which make up the formal documentation process. Service Branch Staffs have been faulted in the past for being unable to divorce themselves from special branch interests in establishing priorities for mission requirements.¹² In view of the platform-oriented position of the DCNOs and their central position to the requirements determination process, it appears that this deficiency may continue to exist in the Navy's revised organization.

2. Restrictive Statements of Need

The statement of need is a key decision point and such statements should initially be understood as a presentation of a problem for which a system solution is sought. Platform-oriented Sponsors lead to formal statements of needs which often describe a design concept for a specific system rather than a description of a mission deficiency which warrants the examination of alternative solutions. These statements of need, called ORs in the current process, must clearly separate the operational need (mission deficiency) from the system solution (product), and present program goals independent of a particular system. In the past, one statement of mission need called not only for a "new manned aircraft, but also specified the take-off

¹²Blue Ribbon Defense Panel, Appendix E, Report to the President and the Secretary of Defense on the Department of Defense, V. 6, p. 15.

(or has been) created to justify the "desirability" of having a new system. In all fairness, it should be pointed out that a requirement can also be generated by new technology which promises a new system to perform an existing mission in a more effective manner. All too often, however, this sort of promise provides only marginal improvement at much greater cost. New technology for the sake of newness must go by the boards as must the development of requirements which are nice-to-have vice need-to-have.

B. PRODUCTION VICE LIFE CYCLE COST CONSCIOUSNESS

The use of life cycle costing techniques, as a prime selection parameter of new weapon systems, has been dictated by DOD directives. Unfortunately, lack of sophisticated and accurate life cycle cost modeling techniques and limited methods of enforcing the use of those (inexact) life cycle cost techniques that are available have significantly restricted the value and use of life cycle cost as a viable selection parameter. Theoretically, the selection of a new weapon system should be predicated on lowest life cycle cost, assuming alternatives are adequately performance capable. This means that among suitable alternatives, the concept design, or system with the lowest cumulative development, procurement, and operating cost, as measured over the system's expected life, should be the

and NAVMAT. This duplication of effort results in what could be characterized as a "Producer-Producer dialogue," supplanting the desired user-producer dialogue. The intended iterative process of OPNAV articulating tasks, roles, and missions, and NAVMAT responding with designs, costs and trade-off analysis may not take place. For example, consider the most likely response of DCNO Air Warfare to an increased need in the Anti-Air Warfare portion of the Sea Control mission. A probable response might be the preparation of an OR which would specify an aircraft type of system to be developed through the joint efforts of OP-05 and the Naval Air Systems Command. Hence, both OPNAV and NAVMAT end up acting as co-producers of a specific platform approach. Perhaps the most cost-effective response to the increased anti-air warfare need in this instance would have been a surface-launched missile developed by NAVSEA or an electronic warfare system developed by NAVELEX. A mission-oriented sponsor would be more likely to prepare a statement of need which would state increased anti-air warfare needs in terms broad enough to elicit development proposal (DP) responses from as many NAVMAT System Commands as possible. Responses from the System Commands would not be limited to a single best offering (multiple alternatives from as many System Commands as possible are desired); and the development proposals might range, technologically, from radical new conceptual proposals to design

modifications of existing systems. The objective of the dialogue, in any case, would be to provide as many alternative proposals (DPs) as possible in order to allow the Mission Sponsor the greatest possible latitude in selecting a system to optimize his mission requirements/capabilities.

4. Follow-On Imperative

Closely allied to the problems of restrictive statements of need and the producer-producer dialogue, is the problem of the follow-on imperative. Most major acquisition programs have been initiated in order to provide replacements for existing weapons. Specific requirements for replacements have frequently been assumed without the benefit of the type of thorough analysis that a new system might be subjected to.¹⁴ This particular bias on the part of platform-oriented Force and Mission Sponsors assumes that there is a requirement to replace existing major systems with succeeding generations of similar systems on a one for one basis; i.e. Trident system replaces Polaris system; P-3 and S-3 aircraft replace P-2 and S-2 aircraft; and Spruance class destroyers replace Gearing class destroyers. Since the development managers have a motivation to supply the sponsor's demand and the demands are for systems which are frequently little more

¹⁴ G. J. Chasko and F. W. Hulvershorn, Requirements Determination of Major Weapon Systems, p. 23.

than improved versions of the old systems, development motivation will be directed toward improving existing subsystems and components. Hence, alternative systems are seldom proposed to the sponsors.

5. Acquisition Precedes Need

The Final Report of Project Hindsight observed that up to seventy-five percent of requirements were established while a weapons system is being developed.¹⁵ This statement tends to correlate with the hypothesis that product pre-occupation prevails over mission requirements. Needs have been expressed in terms of a product rather than a mission function to be performed because preliminary design studies of a system have often preceded the initial requirement for an operational capability.¹⁶ "The large number of iterations on the PF (Patrol Frigate) design would seem to indicate that its role or mission had not been clearly defined beforehand,"¹⁷ yet OP-03 knew that he "needed" at least fifty of these new vessels. The question should be asked whether the system fulfills a need or if the need must be

¹⁵Commission on Government Procurement, Final Report - Study Group #12, p. 183.

¹⁶Ad Hoc Sub Committee on Federal Procurement, Report of the Commission on Government Procurement, Vol. 2, Part C, Acquisition of Major Systems, p. 42.

¹⁷RADM R. C. Gooding, USN, Memorandum for the Chief of Naval Material, Ser 38, Sep 3 - 1974, p. 1.

(or has been) created to justify the "desirability" of having a new system. In all fairness, it should be pointed out that a requirement can also be generated by new technology which promises a new system to perform an existing mission in a more effective manner. All too often, however, this sort of promise provides only marginal improvement at much greater cost. New technology for the sake of newness must go by the boards as must the development of requirements which are nice-to-have vice need-to-have.

B. PRODUCTION VICE LIFE CYCLE COST CONSCIOUSNESS

The use of life cycle costing techniques, as a prime selection parameter of new weapon systems, has been dictated by DOD directives. Unfortunately, lack of sophisticated and accurate life cycle cost modeling techniques and limited methods of enforcing the use of those (inexact) life cycle cost techniques that are available have significantly restricted the value and use of life cycle cost as a viable selection parameter. Theoretically, the selection of a new weapon system should be predicated on lowest life cycle cost, assuming alternatives are adequately performance capable. This means that among suitable alternatives, the concept design, or system with the lowest cumulative development, procurement, and operating cost, as measured over the system's expected life, should be the

alternative selected for procurement. Differences in life cycles of various alternatives must be suitably equated to allow objective evaluation. Under the current Congressional budgetary format and product advocacy of Force and Mission Sponsors, development managers are more oriented to production cost than life cycle cost. The pressure is on development managers to keep the production cost as low as possible and to insure delivery of new systems in accordance with strict Initial Operating Capability (IOC) dates. Pressure on delivery schedule is frequently a fall-out of the follow-on imperative in which acquisition of a new model is needed to replace the old model being phased out. Reduction of production cost may be at the expense of increased operating costs in such areas as reliability, maintainability, availability, etc. Since the long-term operating costs of a new system are frequently several times the production cost, the importance of life cycle costing becomes apparent.

As a sub issue of this section, it should also be pointed out that acquisition development managers are affected by hardware competition at the sponsor level. If, for example, the production cost of a new fighter aircraft is exceeding budgeted cost, OP-05 (DCNO Air Warfare) may: reduce the original purchase quantity of fighter aircraft, decrease aircraft performance parameters (and unit cost), increase projected IOC dates

(lengthen acquisition cycle) or lobby to reprogram funds from another OP-05 sponsored program (i.e. ASW, aircraft program, strike aircraft program, etc.) to support the entire fighter aircraft program. In any case, this type of situation impacts heavily on force level structures and may not permit an equitable distribution of funds to all mission areas.

C. DETERMINATION OF NEEDS AND SELECTION OF SYSTEMS IN ISOLATION OF TOTAL SERVICE CAPABILITY

Perhaps the most exasperating difficulty fostered by platform-biased Force and Mission Sponsors is that only a limited amount of mission overview is provided below the CNO level. The CNO's Systems Analysis Division, OP-96, is organized by mission area and has primary responsibility for the Navy's analytical planning and programming effort. However, it must be recognized that it is not possible to run a large organization with only an analytical approach. The Deputy CNOs for submarine, air, and surface combatant forces clearly outrank and outnumber OP-96, and each have a major interest in sponsoring R&D and procurement in their platform areas. No one Mission Sponsor maintains a continuous, current perspective of a given mission area's total needs and capabilities. Program decisions may be made without regard to current or proposed efforts by

other branches related to the same mission¹⁸ and certainly no single Sponsor is in a position to compare the cost effectiveness values of concurrently developed/operated systems in any of the mission areas.

Thus several of today's Force and Mission Sponsors could be developing/operating what they consider optimized ASW systems; yet, there may be great cost-effectiveness differences between individual systems. Programs should not be initiated/operated independently from total agency capability, needs, and resources. It sometimes appears that each branch of the Navy is striving to acquire an arsenal of weapons complete in itself to carry out any and all possible missions. The goal should be to eliminate unplanned, uncontrolled, unaffordable duplication of system capabilities, both within the Navy and DOD, where such duplication is unwarranted or not cost effective. There is clearly a need to balance the acquisition process by ensuring a more objective exploration and selection of alternative systems to meet mission needs. This dictates the need for a critical, unbiased, and interdisciplinary review and evaluation of: assumptions; technical and strategic analyses; test results;

¹⁸Chasko and Hulvershorn, Requirements Determination of Major Weapon Systems, p. 48.

and system specifications by persons professionally qualified and experienced in the practice of system definition and development, independent of direct control by system advocates. The current OPNAV structure inhibits this eventuality. In addition to the lack of total overview of mission areas by the Navy, Congress is denied adequate budgetary overview. "There is no effective mechanism to appraise Congress of the rationale behind an aggregate of mission needs and their relative priorities."¹⁹

¹⁹Chasko and Hulvershorn, Requirements Determination of Major Weapon Systems, p. 48.

IV. RECOMMENDED MODIFICATIONS TO CURRENT STRUCTURE

The problem areas discussed in Part III of this analysis suggest that the Navy's current Weapons System Selection and Planning procedures, as established in OPNAVINST 5000.42, do not correct several significant deficiencies in the requirements determination process:

- * Product (platform) Vice Mission Orientation
- * Production vice Life Cycle Cost Consciousness
- * Determination of Needs and Selection of Systems in Isolation of Total Service/(DOD) Capability

In order to satisfy the need for critical, unbiased review and evaluation of threats and needs, system specifications, test results, and alternative approaches to mission requirements, it is recommended that the DCNO/Mission and Force Sponsor organization of OPNAV be restructured as follows: Replace the existing DCNO Warfare Areas (OP-02, OP-03 and OP-05) and DCNO Logistics (OP-04) with DCNO Mission Areas which are coincident with the RDT&E Planning Categories of Strategic Deterrence, Sea Control, Projection of Power Ashore, and Mission Support. Thus, each Mission and Force Sponsor will no longer represent a specific type of platform but will be responsible for an entire (and true) mission area. The basic document flow process established

by OPNAVINST 5000.42 appears sound and would remain essentially unchanged as depicted in Figure 3.

Under the restructured OPNAV organization proposed above, CPPGs and CPAMs, generated by the Office of Navy Program Planning (OP-090) and OP-96 respectively, would be used by CNO to evaluate and compare current mission capabilities with overall Navy/JCS/OSD requirements. This comparison would form the basis for annual SECDEF/SECNAV/CNO allocation of Navy funds by mission areas, with deficient mission areas receiving additional funding to achieve necessary levels of capability.

The Mission and Force Sponsors under the proposed system would be responsible for funding; R and D, procurement and operation/maintenance costs of all weapons systems within their respective mission area. The goal of this approach would be to fix mission responsibility and have each Sponsor strive to maximize his mission area's capability within given budgetary limits. Under this process, each Mission and Force Sponsor would reallocate his R and D, procurement and operation/maintenance funds among the sub-mission areas which make up his total mission area. Existing OPNAV Directorships such as the Director of ASW Programs and the Director Command, Control, and Communications would become part of the Mission Area structure as depicted by the proposed mission area breakdowns presented in Figures 4 through 7. When a requirement to increase mission capability

in a given sub-area is forecasted, the Sponsor would update his Force and Mission plan in consonance with the CPPG and EPG and coordinate with OP-98 to ensure the STO for the mission area reflects the new, long-range objectives. When an OR is issued, the Mission Sponsor would state the operational need in broad terms, independent of a system product. The Naval Material Command would respond by circulating the broad-based OR to all of its technical bureaus, laboratories and research centers. The development proposals from each of the responding SysComs would then be submitted to the Mission Sponsor/CEB for selection of a preferred approach. For his part, the Mission Sponsor would analyze and compare the projected effectiveness, acquisition costs, and life cycle costing of competing alternatives and, in addition, compare projected parameters of these competing alternatives with the actual (historical) effectiveness and life cycle costing of systems currently in his mission inventory. Given his broad mission overview and budgetary constraints, the Mission Sponsor may opt to:

1. Reduce or eliminate one or more current systems in favor of a more cost-effective new alternative.
2. Expand current systems if they are more cost-effective than new proposed alternatives.
3. Reject all DPs in favor of continued R and D effort to achieve a more cost-effective future alternative.

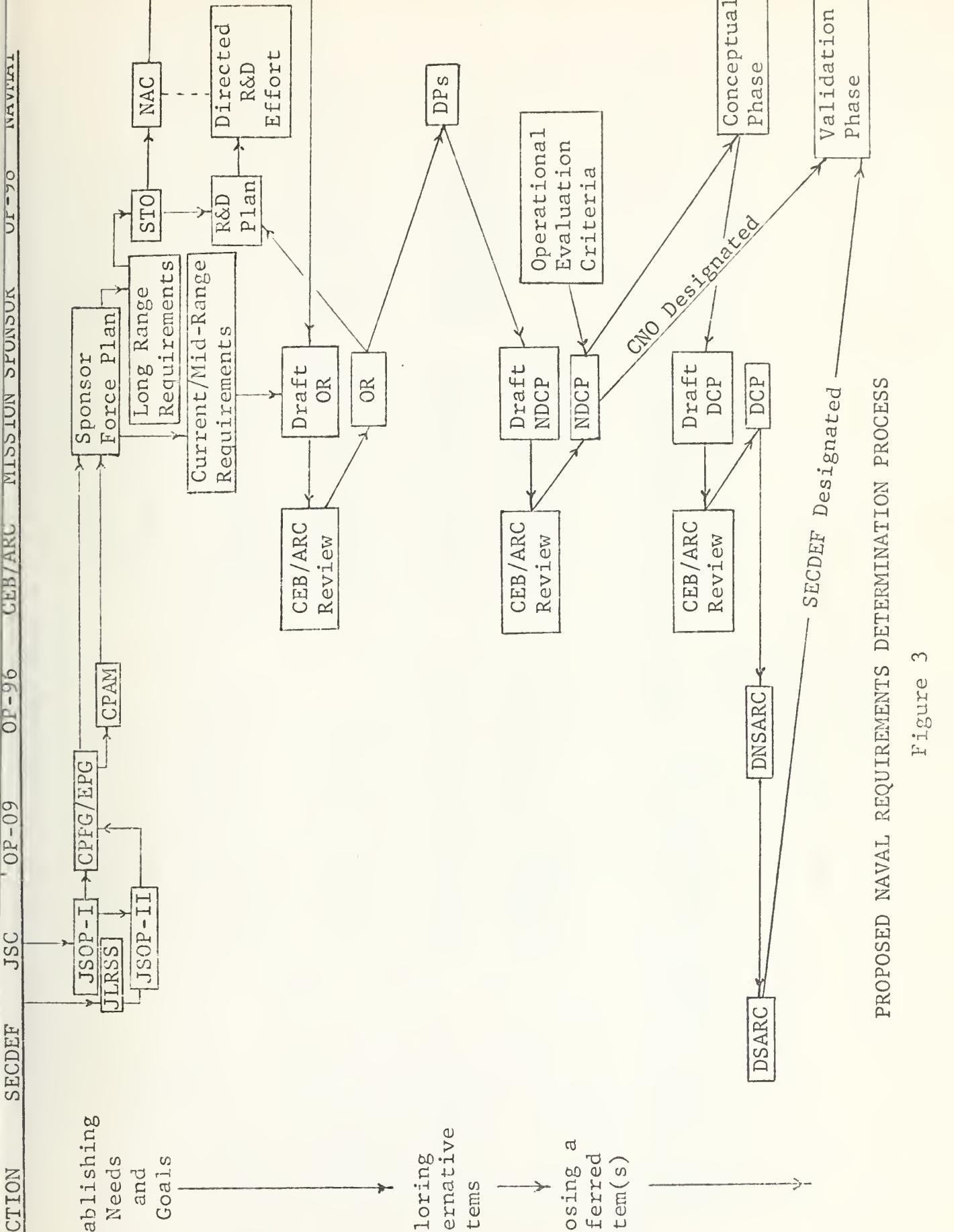
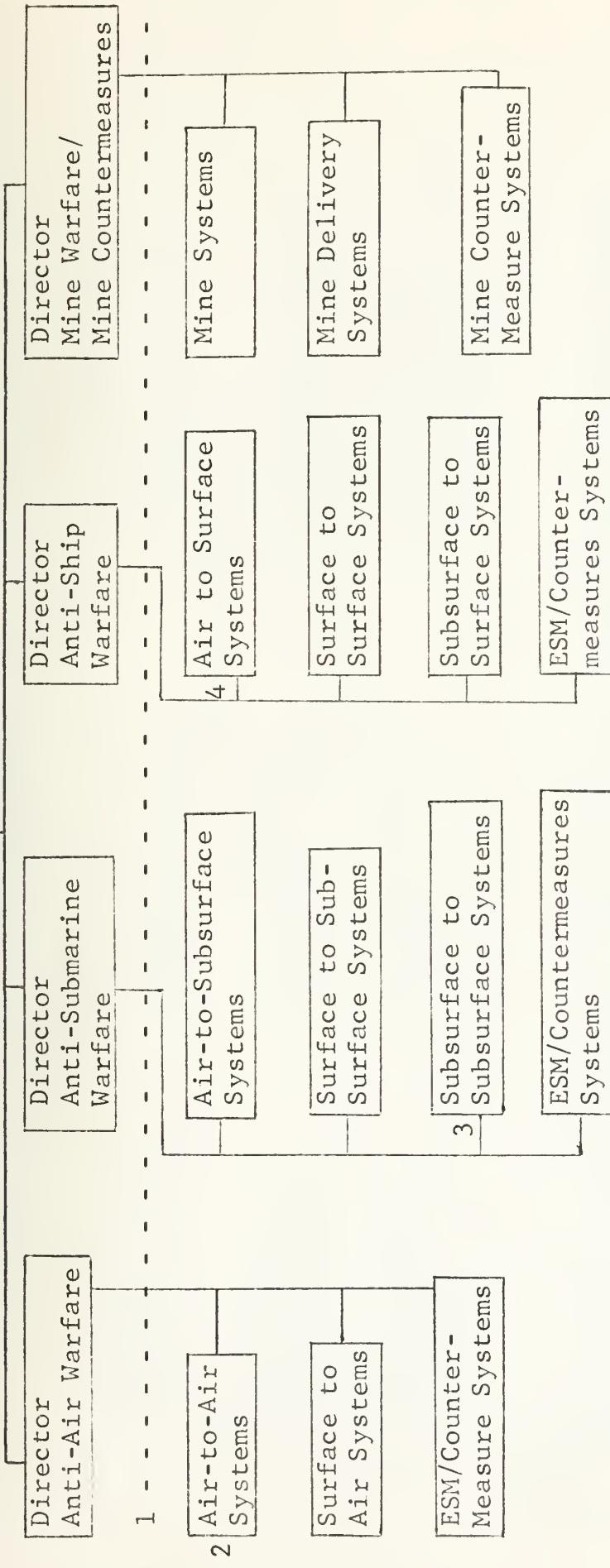


Figure 3

PROPOSED NAVAL REQUIREMENTS DETERMINATION PROCESS

SEA CONTROL



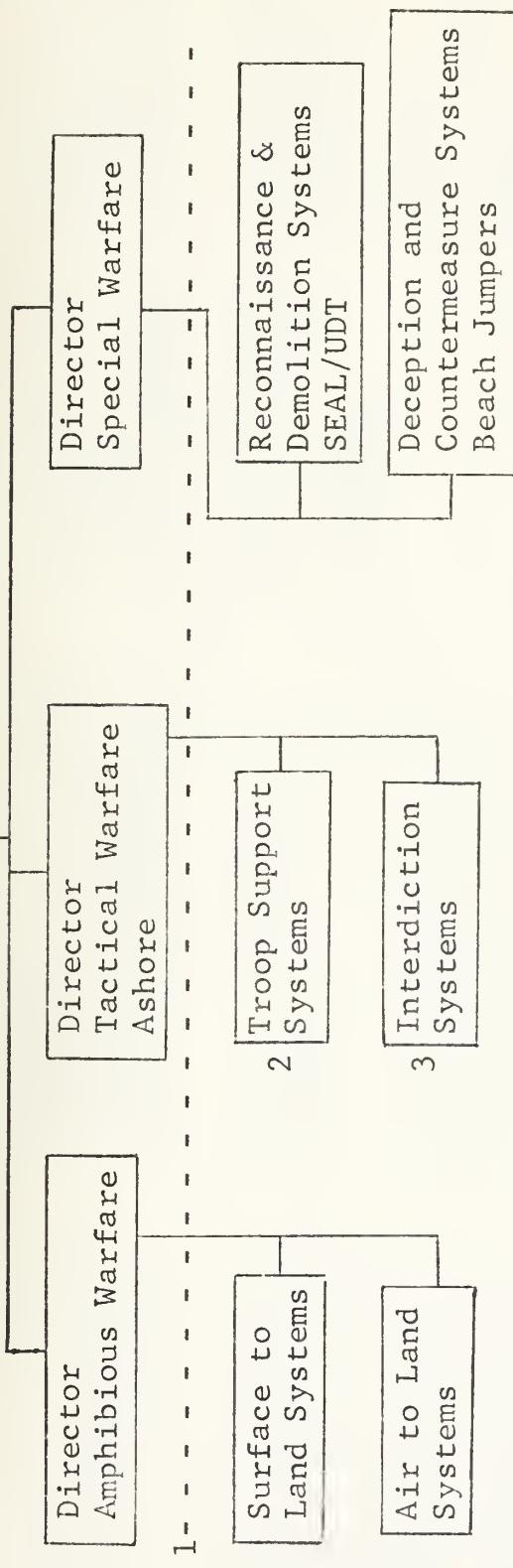
NOTES:

1. Organizational structure below dashed line is only one of several possible alternatives.
2. Might include satellite surveillance, AWACS, missiles, aircraft, etc.
3. Might include SOSUS, Submarines, etc.
4. Might include satellite surveillance, cruise missiles, aircraft, smart bombs, etc.

SEA CONTROL MISSION BREAKDOWN

Figure 4

DCNO
PROJECTION OF
POWER ASHORE

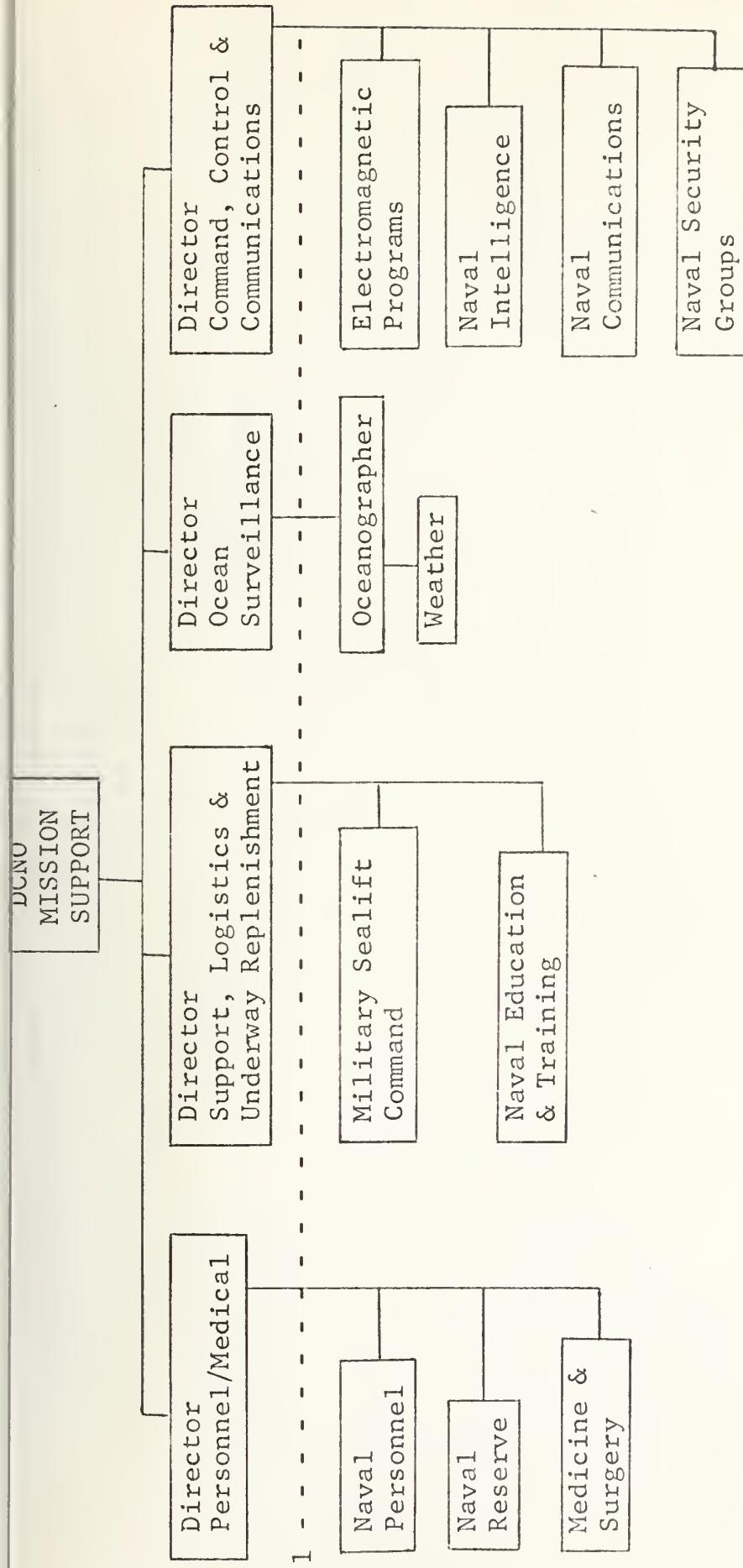


NOTES:

1. Organizational structure below dashed line is only one of several possible alternatives.
2. Might include close air support (CAS) and Naval gunfire support (NGFS) systems.
3. Might include strike aircraft, cruise missiles, remote piloted vehicles (RPV) and long range laser guided NGFS.

PROJECTION OF POWER ASHORE MISSION BREAKDOWN

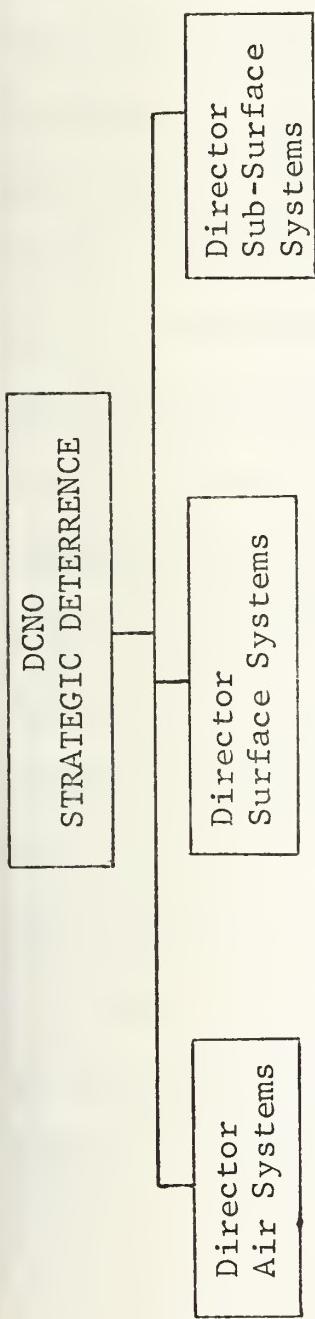
Figure 5



1. Organizational structure below dashed line is only one of several possible alternatives.

MISSION SUPPORT BREAKDOWN

Figure 6



STRATEGIC DETERRENCE MISSION BREAKDOWN

Figure 7

Implicit in this entire analysis and decision process is the assumption that all new alternatives (submitted via DPs) and current systems in being, will be compared and analyzed as to cost effectiveness utilizing similar evaluation criteria. In this vein it should be recognized that the organizational collation of mission-oriented systems under a Mission Sponsor will require a significant initial effort to identify individual current systems cost of ownership (Operating and maintenance costs) and establish a standard mission method or model for determining individual current system effectiveness. This initial effort will allow a pragmatic cost-effectiveness comparison of current mission systems and proposed future alternatives (DPs). Although perhaps time consuming, it is imperative to determine "where we are" with regard to total mission capability and cost effectiveness before determining "where to go" in terms of future acquisitions. Reflection at this point is a requisite for mission capability optimization.

Thus, various "platform type" systems could be evaluated as to individual sub-mission area cost effectiveness, and that (those) system(s) selected which would most enhance the mission capability vis-a-vis cost effectiveness. In this situation, it is entirely possible that the most cost-effective sub-mission area alternative is not the most cost-effective mission area

selection, i.e., the effect of overall mission area synergism may dictate system selection.

The results of this proposed organizational change should thus be to:

1. Optimize mission area capabilities through the elimination of unplanned, uncontrolled and unaffordable duplication of weapon systems and wastage of scarce resources.
2. Establish and operate within a total mission area budget in which all systems (new and old) should be acquired, operated, and maintained.
3. Establish objective methods of determining mission area capabilities or deficiencies and for selecting systems to eliminate or reduce mission deficiencies in the most cost-effective manner.
4. Establish realistic time-phased plan for introduction of systems to eliminate or reduce mission area deficiencies.
5. Allow greater Congressional oversight of acquisition and operational expenditures on a mission capability basis.

A. RESOLUTION OF EXISTING PROBLEMS

1. Problem IIIA; Product Orientation of DCNOs

Divorced from the grip of premature platform advocacy, mission area sponsors should provide more objectivity in defining and evaluating Navy needs with regard to mission area deficiencies. Competition for funds among mission sponsors should be anticipated, but competition at the mission area level is more constructive than competition at the platform level.

Mission area sponsors (DCNOs) would continue to impact heavily in the requirements determination process but in a specific mission area instead of performing the role of platform advocate. While DCNOs would specify the boundary conditions that must be met by any system, including constraints on physical size, operating conditions, tactics and the talents of users; the role of system and platform advocate would essentially be returned to the Naval Material Command where it belongs (i.e. NAVAIRSYSCOM advocates the acquisition of a new aircraft and the Mission Sponsor compares NAVAIR's proposal with the other SYSCOM recommended alternatives prior to making a selection). Thus OPNAV/DCNOs would focus on mission and strategy problems while NAVMAT/SYSCOMS would focus on conceptual and design problems.

As a mission vice a platform sponsor, the statements of mission area needs leading to operational requirements (ORs)

will be broad enough to allow full participation by all technical bureaus within NAVMAT. These open-ended problem vice solution-oriented ORs will allow the introduction of innovative new alternatives to meet mission area needs.

The re-establishment of NAVMAT as the producer responding to broad OPNAV (user) mission requirements will convert the existing "producer-producer" relationship to the desired "user-producer" relationship.

Since the mission area sponsor will be interested solely in optimizing his mission area capability, within budgetary restraints, he will be less susceptible to the problems of the "follow-on imperative." Rather than feeling constrained to accept the next generation of an existing system, the mission sponsor will be continually faced with the problem of optimizing total mission capability and will only accept a follow-on initiative if it proves mission-area cost effective relevant to other mission alternatives.

Recognizing the high price of entry into new technology, the mission sponsor will only introduce it when absolutely necessary and should thus preclude himself from indulgence in acquisition which precede a mission requirement/need.

2. Problem IIIB; Acquisition Vice Life Cycle Cost

Consciousness

Since mission sponsors will be required to fund the cost of mission systems operation and maintenance as well as acquisition cost, there will be much stronger motivation to base selection of a preferred system(s) on life cycle costing. Life cycle costs often represent a value many times the acquisition cost of a system and, even at a realistically discounted present value, may represent the significant cost parameter of a new/existing system.

3. Problem IIIC; Determination of Needs and Selection in Isolation of Total Service Capability

Collation of all mission capabilities and deficiencies under the accountability and responsibility of a single mission sponsor will prevent the determination of needs (ORs) and selection of systems in isolation of total service capability. The total package presentation of a single mission area's capabilities and limitations coupled with early visibility of the alternatives being considered by the mission sponsor to eliminate mission soft spots will enhance Congressional overview of Navy defense spending and increase Congressional confidence in acquisition programs.

The fact that Congress is committed to the principle of itemization in order to achieve the maximum degree of control

and oversight is not inimical to the broader presentation of budget requests by mission areas. Itemization within each mission area can readily be provided for R and D, Operations and Maintenance (O&M), Military Construction (MILCON), Shipbuilding and Conversion (SCN) and other appropriation categories.

B. NEW ORGANIZATION - NEW PROBLEMS

1. Any change initiated to correct existing problems invariably creates new and different problems of its own, and the proposed organizational change of OPNAV is no exception. One of the first potential problem areas to be addressed under the new organizational structure is the existence of multi-mission platforms. While the current organization creates a situation in which "everyone worries about platforms but no one worries about missions," the proposed organizational change might foster a climate in which "everyone worries about missions and no one worries about platforms." Specifically, we could now have a situation in which two or more Mission Sponsors, preoccupied with their particular mission areas, were sharing a particular platform.

Fortunately, under the proposed OPNAV organization, most current platforms (ship hulls and aircraft) will fall into a single mission area (Sea Control, Projection of Power Ashore

and Strategic Deterrence) and should preclude this eventuality. The most notable exception, of course, is the current inventory of aircraft carriers which fulfill roles in three of the new mission areas.

In the case of development, procurement, operation and maintenance funding for multi-mission platforms, each mission area sponsor (DCNO) would fund his attendant "mission percentage" of the multi-mission platform cost. This percentage funding by two or more Mission Sponsors may also have the additional benefit of reducing the cost of major acquisitions in that no one Mission Sponsor will be willing to finance excess capability or "gold plating" of the platform. Requiring the approval of all cognizant Mission Sponsors for engineering change proposals, configuration changes, price changes, and operation and maintenance cost changes should help to stabilize the planning and funding parameters of major acquisition projects. Perhaps a Memorandum of Understanding (MOU) similar to the type used in NATO projects could be adapted for use in assessing mission funding levels for production (SCN) and annual operation and maintenance costs (O&M) of multi-mission platforms. These joint funds could then be administered by that DCNO having primary interest in the platform (Prime DCNO). Implicit in this proposal is the right of any DCNO providing partial multi-mission platform funding (SCN or O&M) to withdraw his support if production or

operation and maintenance costs of the multi-mission platform increase substantially above the MOU levels and render the platform's cost effectiveness non-competitive with other mission systems. In this case, the Prime DCNO may have to provide additional funding of his own to cover the increased cost, gain additional funding support from other DCNOs remaining in the program or initiate platform trade-offs to reduce costs to originally agreed upon levels and thus retain all original cognizant DCNO funding support.

Short of this, an alternative action could be to design smaller, less costly single mission ships. In view of the proposed organization of OPNAV/DCNOs into mission areas, this may become a more operationally and economically attractive alternative (i.e. ships/planes would be designed specifically for Sea Control, Projection of Power Ashore and Strategic Deterrence). For example, an evolutionary process might lead to smaller aircraft carriers optimized for sea control with larger carriers maintained for Projection and Strategic missions. Additionally, an escort group consisting of six 4000-6000 ton destroyers, each capable of helo operations, might be replaced at decreased cost and increased effectiveness by five 1500-2000 ton destroyers, no helo capability, and one 12,000-15,000 ton sea control ship (helos and VSTOL aircraft embarked).

Although mission orientation will predominate at the OPNAV level, it should be possible for the cognizant technical bureaus of NAVMAT (NAVAIR, NAVSEA, etc.) to adequately protect platform integrity and thereby avoid any loss of platform "spokesmanship" due to an OPNAV reorganization.

2. A major problem associated with the proposed OPNAV reorganization is the sheer numbers of people and bureaucracies affected. The people concerned must realize that the change is not being recommended to correct any gross failure on their part but to ensure their continued success by realigning the OPNAV organization along more effective mission-oriented lines. It is understood that there appears to have been a real need for a DCNO Air when it was established in August of 1943. Under the bilinear Navy Department of that period, naval aviation proponents recognized that a narrow view of aviation dominated the thinking of the senior Navy hierarchy and foresaw the requirement for stronger representation within the office of the Chief of Naval Operations. The Bureau of Aeronautics and DCNO Air combined to provide an integrated approach to aviation matters which helped to guide the rapid growth of naval air capabilities within the bilinear system. Similarly, with the advent of the Fleet Ballistic Missile Submarine, submarine warfare acquired new dimensions well beyond that of seeking out and destroying enemy shipping. Well aware of the

successful naval aviation model, the submarine community used this increased capability to wage war as a means of getting their own DCNO and being officially recognized as a distinct category of naval warfare. Now that the need for strong naval aviation and submarine capabilities has been clearly established and the Naval hierarchy has learned to look beyond the splash of a sixteen-inch shell, the requirement for a special DCNO to represent each platform area is no longer necessary to insure a balanced Navy. It is, therefore, concluded that a realignment of DCNOs along mission lines can be considered without fear of compromising the overall effectiveness of the requirements determination process.

The DCNOs will not be losing any of their power under the proposed OPNAV realignment but will be channeling their efforts in a less parochial manner for the overall benefit of the Navy. In addition, career patterns, opportunities and training for naval officers will be greatly enhanced by providing a broader perspective of naval strategies and tactics. Mission orientation at the DCNO level will permit exposure of naval officers to any or all of the mission areas vice limited exposure to currently platform-oriented DCNO structures. Thus aviation, submarine and surface officers alike would be equally acceptable in all Mission Sponsor (DCNO) organizations and the emphasis would be on professional development and competition vice

platform skill. Early broadening of professional horizons would provide naval officers less parochially inclined and more objective in outlook for future high-level (Fleet Commanders, CNO, etc.) assignments.

In summary, the Navy clearly took a step in the right direction with OPNAVINST 5000.42. However, additional steps to improve the requirements determination process must be made before many of the deficiencies identified by the Commission on Government Procurement and other study groups can be corrected. The trauma and risk of change can be diminished by careful implementation of a time-phased plan. The alternative approach of doing nothing and paying only lip service to outside criticism does not appear to be in the Navy's best interest, particularly during this era of increased Congressional awareness.

C. SAMPLE REQUIREMENTS DETERMINATION SCENARIO UNDER THE PROPOSED ORGANIZATIONAL STRUCTURE

1. The Joint Chiefs of Staff increase their estimates of U.S. sealift logistical support required in Western Europe in support of NATO troops engaged in conventional war with Warsaw Pact forces.

2. CNO conducts analyses (CPPG/CPAM) and determines that additional merchant shipping required to meet the Joint Chief's logistical requirements will increase the requirements for anti-submarine protection.

3. DCNO Sea Control, using inputs from his Director ASW Programs, updates the Force and Mission Plan and coordinates with OP-98 in updating the Mission Area Science and Technology Objectives. After reviewing NAC to determine general state of the art limitations, a broad draft OR is initiated which states need for increased capability to protect greater numbers of merchant convoys in the North Atlantic.

4. The CEB/ARC reviews and approves DCNO Sea Control's Draft OR. The approved OR is incorporated in the mission R&D plan and is forwarded to NAVMAT.

5. The Chief of Naval Material (CNM) circulates the OR among his technical bureaus, laboratories, and research facilities and solicits development proposals (DPs) to meet the OR.

6. Technical bureaus, laboratories, and research facilities respond to the OR with their individual approaches to problem resolution.

7. CNM collates all DPs and submits them to DCNO Sea Control as possible alternatives to meet the new operational requirement.

8. DCNO Sea Control and his Director-ASW Programs evaluate total current ASW program systems capabilities, effectiveness, and cost and compare these systems/parameters with NAVMAT proffered DP alternatives. Included in the current ASW systems capabilities are:

<u>ASW SYSTEM</u>	<u>NAVMAT SPONSOR</u>
SOSUS network	NAVFAC
P-3 a/c VP	NAVAIR
S-3 a/c VS	NAVAIR
DD-963 ship	NAVSEA
DE-1052 ship	NAVSEA
SH-3/LAMPS a/c	NAVAIR
MK-48 torpedo	NAVORD
SSN-688 submarine	NAVSHIPS SPO

9. Among the alternatives offered in response to the operational requirement, the following feasible alternatives are selected for comparison with existing systems on a cost effectiveness basis:

<u>DEVELOPMENT PROPOSAL</u>	<u>SPONSOR</u>
Increased SOSUS coverage	NAVFAC
Electronic Ship Acoustic Masker	NAVELEX
Improved VP aircraft	NAVAIR
Improved Destroyer Escort	NAVSEA
Improved VS aircraft	NAVAIR

10. Within sub-mission area (ASW-Programs) funding constraints, DCNO Sea Control concludes that most alternative DPs offer only marginal improvement in performance at greatly increased cost. Adoption of any of this type of alternative will necessitate significant reduction of current ASW force

assets. DCNO Sea Control, therefore, decides on a strategy of maintaining his current ASW force level and procuring Electronic Ship Acoustic Maskers from NAVELEX. This, he concludes, will be his most cost-effective selection. Although he must spread his existing force level assets thinner to protect increased numbers of merchant convoys, the electronic ship acoustic masker will reduce the acoustic detection capability of enemy submarines by 80%. Hence, existing ASW assets will be guarding increased merchant convoys which are 80% less detectible by enemy submarines, and the overall ASW mission risk to NATO logistical support will have been reduced in the most cost-effective manner.

V. CONCLUSIONS

Projections of numerous indicators portend potentially crippling fiscal paralysis of future defense acquisition plans. Among these, the following loom as perhaps the most significant:

- * Increasing ownership cost of defense systems.
- * Eroding effect of current inflationary trend on "real" defense purchasing power.

In addition, increasing Congressional dissatisfaction with rapidly rising defense budgets and a growing Congressional predilection for improved and expanded overview (Budget Control Act of 1974) of administrative budgetary implementation mandate improved Navy fiscal effectiveness.

Conclusive evidence indicates the need for a rechanneling of effort in the Navy's OPNAV structure in order to more effectively discharge its responsibilities in a changing fiscal environment. Organization of the OPNAV/DCNO structure consistent with mission instead of platform orientation is recommended not necessarily to correct failure, but to ensure continued success in maintaining a viable and capable Navy in a changing environment.

Organization of the OPNAV structure into the previously addressed DCNO mission area of: (1) Strategic Deterrence,

(2) Sea Control, (3) Projection of Power Ashore and (4)

Mission Support will:

1. Place Navy systems under the control of a cognizant mission DCNO for quicker and more effective response to changing mission needs and requirements.
2. Permit cost-effectiveness measurement of competing systems at various mission organizational levels.
3. Assign mission authority, responsibility and accountability to a single DCNO who can be given clear performance guidelines.
4. Permit comparison of DCNO performance with Navy goals and objectives.
5. Facilitate an action oriented, future looking management style.

Thus the goal of the recommended OPNAV organizational structure is to create a more mission-oriented organization, capable of optimizing mission area effectiveness within given budgetary and planning constraints. Given commensurate administrative and Congressional support, due accountability can be exacted from those (DCNOs) ceded adequate authority and responsibility for achieving Navy goals and objectives.

BIBLIOGRAPHY

1. Ackerman, R. W., Rosenblum, J. W., and Vyternoeven, H.E.R., Strategy and Organization, Richard D. Irwin, Inc., 1973.
2. Ad Hoc Sub-Committee on Federal Procurement, Report of the Commission on Government Procurement, Vol. 2, Part C, Acquisition of Major Systems, Government Printing Office, 1974.
3. Aerospace Research Center, Monopsony! A Fundamental Problem in Government Procurement, The Orkand Corp., Silver Springs, Maryland, 1973.
4. Blue Ribbon Defense Panel, Report to the President and the Secretary of Defense on the Department of Defense, Government Printing Office, 1970.
5. Brodie, Bernard, Strategy in the Missile Age, Princeton University Press, 1959.
6. Chasko, G. L. and Hulvershorn, F. W., Requirements Determination of Major Weapon Systems, Naval Postgraduate School, 1974.
7. Chiles, Lawton, United States Senator, Chairman, Sub-Committee on Federal Procurement, Committee on Government Operations, Ltr to CNO ADM J. L. Holloway, III, August 22, 1974.
8. Commission on Government Procurement, Final Report - Study Group #12, Government Printing Office, 1972.
9. Commission on Government Procurement, Report of the Commission on Government Procurement, Government Printing Office, 1972.
10. Comptroller General, Acquisition of Major Weapon Systems, (B-163058), 1971/72.
11. Craft, Thomas G., Improving the Congressional Phase of Federal Processing, George Washington University, 1972.
12. DOD Directive 5000.1, 13 July 1971, "Acquisition of Major Defense Systems".

13. Enthoven, A. C. and Smith, K. W., How Much is Enough - Shaping the Defense Program 1961-1969, Harper and Row, 1971.
14. Fried, E. R., Rivlin A. M., Schultze, C. L. and Teeters, N. H., Setting National Priorities - The 1973 Budget, The Brookings Institution, 1972.
15. General Dynamics, Pomona Division, Fiscal and Life Cycles of the Defense Systems, Pomona, 1973.
16. Gooding, R. C., RADM USN, Commander Naval Sea Systems Command, Memorandum for the Chief of Naval Material, ser 38, Sep 3-1974.
17. Hitch, C. J., Decision Making for Defense, University of California Press, 1965.
18. Holloway, J. L. III, Admiral, U. S. Navy, Chief of Naval Operations, Letter of 13 Dec 1974 to Senator Lawton Chiles.
19. Huntington, Samuel P., The Soldier and the State, Alfred A. Knopf Inc., 1957.
20. Jordan, Robert L., The Requirements Determination Process for Major Naval Weapon Systems: A Procedural Analysis, Naval Postgraduate School, 1974.
21. Judson, Robert R., Unilateral Initiatives Open to the Navy to Implement System Acquisition Recommendations of the Commission on Government Procurement, Naval Postgraduate School, 1974.
22. Logistics Management Institute, The Contractual Implications of the Design-to-Cost Concept, Government Printing Office, 1974.
23. OPNAV Instruction 5430.49, 19 February 1974, "Navy Net Assessment Organization."
24. OPNAV Instruction 5000.42, 1 June 1974, "Weapon System Selection and Planning."
25. Ries, John C., The Management of Defense, The Johns Hopkins Press, 1964.
26. SECNAV Instruction 5000.1, 13 March 1972, "System Acquisition in the Department of the Navy."

27. Taylor, Maxwell D., The Uncertain Trumpet, Harper and Brothers, 1959.
28. Yarmolinsky, Adam, The Military Establishment, Harper and Row, 1971.

INITIAL DISTRIBUTION LIST

No. Copies

- | | |
|---|---|
| 1. Defense Documentation Center
Cameron Station
Alexandria, Virginia 22314 | 2 |
| 2. Library, Code 0212
Naval Postgraduate School
Monterey, California 93940 | 2 |
| 3. Department Chairman, Code 55
Department of Operations Research
and Administrative Sciences
Naval Postgraduate School
Monterey, California 93940 | 1 |
| 4. Adjunct Professor Robert Judson
Department of Operations Research
and Administrative Sciences
Naval Postgraduate School
Monterey, California 93940 | 4 |
| 5. Assoc. Professor M. G. Sovereign
Department of Operations Research
and Administrative Sciences
Naval Postgraduate School
Monterey, California | 1 |
| 6. LCDR Lawrence E. Probst, USN
122 Belle Drive
Marina, California 93933 | 1 |
| 7. LCDR Richard A. Wilson, USN
13 Shubrick Road
Monterey, California 93940 | 1 |

11 FEB 76
16 MAY 76

~~30 AUG 77~~

~~30 AUG 77~~

~~15 SEP 77~~

16 JUN 81

~~14 APR 82~~

24144

24144

~~24144~~

~~24144~~

~~24144~~

27602

27388

Thesis 160785
P94418 Probst
c.1 The requirements de-
termination process for
naval weapon systems:
an organizational
analysis.

11 FEB 76
16 MAY 76

~~30 AUG 77~~

~~15 SEP 77~~

16 JUN 81

24144

24144

~~24144~~

~~24144~~

~~24144~~

27602

27388

160785

Thesis
P94418 Probst
c.1 The requirements de-
termination process for
naval weapon systems:
an organizational
analysis.

thesP94418missing
The requirements determination process f



c.1 3 2768 001 93212 2 c.1
DUDLEY KNOX LIBRARY